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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,805	06/02/2006	Xuecheng Qian	CN03 0074 US1	7281
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EXAMINER				
TRAN, PABLO N				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/581,805

**Applicant(s)**

QIAN, XUECHENG

**Examiner**

Pablo N. Tran

**Art Unit**

2618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF 298)  
Paper No(s)/Mail Date \_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-5, 7-10, and 12-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Vaisanen et al. (hereinafter "Vaisanen", US Pat. No. 7,415,247).

As per claims 1, 8, 18, 23, and 31, Vaisanen disclose an RF filtering and amplifying apparatus having a plurality of RF filters, connected with each other in a manner of cascade, for filtering the received radio signal level by level (see fig. 1/no. 106, 110, 126, 130, fig. 2/no. 2); a LNA (see fig. 1/no. 108, 128, fig. 2/no. 4), for amplifying the filtered signal to output an amplified and filtered signal.

As per claims 2 and 19, Vaisanen disclose a control unit, for generating a control signal according to the frequency band of the received radio signal, wherein each of the plurality of RF filters tunes to the corresponding operating band to filter the radio signal in the receive frequency band level by level; the LNA tunes to the corresponding operating band according to the control signal, to amplify the filtered signal in the

corresponding frequency band, so as to output an amplified and filtered signal in the corresponding frequency band (see col. 1/nl. 59-col. 2/nl. 44, col. 5/nl. 1-col. 6/nl. 10).

As per claims 3, 9, 20 and 24, Vaisanen disclose a plurality of LNAs, each located between two adjacent RF filters of the plurality of RF filters, for amplifying the signal outputted by the RF filter in front of the LNA (see fig. 1).

As per claims 4 and 21, Vaisanen disclose a plurality of LNAs, each located between two adjacent RF filters of the plurality of RF filters, and tuning to the corresponding operating band according to the control signal, so as to amplify the signal in the corresponding frequency band outputted by the RF filter in front of the LNA (see col. 1/nl. 59-col. 2/nl. 44, col. 5/nl. 1-col. 6/nl. 10).

As per claims 15 and 10, Vaisanen disclose each of the plurality of RF filters has different selectivity (see col. 1/nl. 59-col. 2/nl. 44, col. 5/nl. 1-col. 6/nl. 10).

As per claims 7 and 22, Vaisanen disclose an RF filtering and amplifying apparatus having a control unit (see fig. 1, 2), for generating a control signal according to the frequency band of the received radio signal; a plurality of RF processing modules (see fig. 1, 2), corresponding to a plurality of radio links, wherein each RF processing module filters and amplifies the radio signal in the corresponding frequency band to output an amplified and filtered signal in the corresponding frequency band; a front-end band switching unit (see fig. 1/no. 104), for switching the received radio signal in the corresponding frequency band to the RF processing module in the corresponding frequency band of the plurality of RF processing modules, according to the control signal; a back-end band switching unit (see fig. 1/no. 114, 134, for switching

to the RF processing module in the corresponding frequency and, so as to receive the amplified and filtered signal in the corresponding frequency band outputted from the RF processing module (see col. 1/nl. 59-col. 2/nl. 44, col. 5/nl. 1-col. 6/nl. 10).

As per claim 12, Vaisanen disclose at least two LNAs behind the RF filters at the same level in at least two RF processing modules of the plurality of RF processing modules, form a LNA, and the formed LNA amplifies the filtered signal of the RF filters from the RF processing modules in the corresponding frequency band, and provides the amplified signal to the RF filters at next level in the RF processing module in the corresponding frequency band (see fig. 1).

As per claims 13 and 25, Vaisanen disclose a tunable RF processing module, for filtering and amplifying the received radio signal in the corresponding frequency band according to the control signal, and providing the amplified and filtered signal in the corresponding frequency band to the front-end band switching unit (see col. 1/nl. 59-col. 2/nl. 44, col. 5/nl. 1-col. 6/nl. 10).

As per claims 14 and 26, Vaisanen disclose the tunable RF processing module includes at least one RF filter, for filtering the received radio signal in the corresponding frequency band according to the control signal; at least one LNA, for amplifying the filtered signal to output an amplified and filtered signal in the corresponding frequency band (see fig. 1).

As per claims 15 and 27, Vaisanen disclose a tunable RF processing module, for receiving the output signal in the corresponding frequency band from the back-end band switching unit according to the control signal, and filtering and amplifying the

output signal in the corresponding frequency band (see col. 1/nl. 59-col. 2/ln. 44, col. 5/ln. 1-col. 6/ln. 10).

As per claims 16 and 28, Vaisanen disclose the tunable RF processing module includes at least one RF filter, for filtering the output signal in the corresponding frequency band from the back-end band switching unit, according to the control signal; at least one LNA, for amplifying the filtered signal to output an amplified and filtered signal in the corresponding frequency band (see col. 1/nl. 59-col. 2/ln. 44, col. 5/ln. 1-col. 6/ln. 10).

As per claim 17, Vaisanen disclose a receiving unit, for receiving radio signal; an RF filtering and amplifying unit (see fig. 1, 2), for filtering the received radio signal level by level, and amplifying the filtered signal; an ADC (see fig. 2/no. 8), for analog-to-digital converting the amplified and filtered signal to get a digital signal; a digital signal processing unit (see fig. 2/no. 9), for processing the digital signal.

As per claim 29, Vaisanen disclose an RF filtering and amplifying method comprising steps of filtering the received radio signal level by level; amplifying the filtered signal to output an amplified and filtered signal; generating a control signal according to the frequency band of the received radio signal; filtering the radio signal in the receive frequency band level by level according to the control signal; amplifying the filtered signal in the corresponding frequency band according to the control signal, so as to output an amplified and filtered signal in the corresponding frequency band (see fig. 1, 2, col. 1/nl. 59-col. 2/ln. 44, col. 5/ln. 1-col. 6/ln. 10).

As per claim 30, Vaisanen disclose an RF filtering and amplifying method comprising steps of generating a control signal according to the frequency band of the received radio signal; switching the received radio signal in the corresponding frequency band to the RF processing sector in the corresponding frequency band according to the control signal; filtering and amplifying the radio signal in the corresponding frequency band, to output an amplified and filtered signal in the corresponding frequency band; switching to the RF processing sector in the corresponding frequency band according to the control signal, to receive the amplified and filtered signal in the corresponding frequency band (see fig. 1, 2, col. 1/nl. 59-col. 2/nl. 44, col. 5/nl. 1-col. 6/nl. 10).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vaisanen et al. (hereinafter "Vaisanen", US Pat. No. 7,415,247) and in view of Abdelmonem (US Pat. No. 6,711,394).

As per claims 6 and 11, Vaisanen does not specifically disclose such arrangement of the cascade filters as claimed. However, Abdelmonem teaches such cascade filter arrangement with insertion losses (see col. 2/nl. 13-21). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention for

Vaisanen to utilize such filter arrangement, as taught by Abdelmonem, in order to improve receiver selectivity and out-of-band rejection while reducing insertion losses.

***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pablo Tran whose telephone number is (571)272-7898. The examiner normal hours are 9:30 -5:00 (Monday-Friday). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban, can be reached at (571)272-7899. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.
6. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) System. Status information for Published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-directauspto.gov>. Should You have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (in USA or CANADA) or 571-272-1000.

September 29, 2008

/Pablo N Tran/

Primary Examiner, Art Unit 2618